SIERRA CLUB
FOUNDED 1892

July 2, 2013

By email and U.S. Mail

Andrew Parks
EPA Region 4, APTMD
61 Forsyth Street, SW
Atlanta, GA 30303
parks.andrew@epa.gov

RE: Port Everglades Energy Center – Permit PSD-EPA-R4010

Dear Mr. Parks:

These comments are submitted on behalf of Sierra Club and its 600,000 members, including over 27,000 members in Florida. The issues addressed below regarding the proposed *Draft Prevention of Significant Deterioration Permit for Greenhouse Gas Emission* for Florida Power and Light's (FPL) Port Everglades Energy Center, LLC (Port Everglades Project) are based on the publicly available documents, including the May 29, 2013 Statement of Basis (SOB) prepared by EPA Region 4 (the Region), the draft permit, and the application.

The proposed Port Everglades Project would replace four existing oil-fired units with one nominal 1,250 MW 3-on-1 combined cycle natural gas unit in Broward County, Florida. The Port Everglades Project is subject to greenhouse gas (GHG) prevention of significant deterioration (PSD) regulations. New construction projects that are expected to emit at least 100,000 tpy of total GHGs on a carbon dioxide equivalent (CO_2e) basis, or modifications at existing facilities that are expected to increase total GHG emissions by at least 75,000 tpy CO_2e, are subject to PSD permitting requirements even if they do not significantly increase emissions of any other PSD pollutant. FPL estimates that the Project will potentially result in GHG emissions of 4,478,017 tons per year (tpy) of CO_2e. The Project would emit GHGs at a rate far greater than 100,000 tpy CO_2e; therefore, the project is subject to PSD review for all pollutants emitted in a significant amount.

The draft permit proposes a GHG limit of 832 lb CO_2e/MWh, net output on a 12-month rolling average when operating on natural gas, and 1,176 lb CO_2e/MWh when operating on fuel oil.

1. The Region Must Establish the GHG BACT Limit Based on the Most-Efficient, Lowest Polluting Turbine Design Technology.

The draft permit failed to set GHG emission limits based on the most efficient, and therefore lowest emitting, combined cycle turbine design. The SOB considers two turbine designs: (1) the Mitsubishi Power Systems (MPS) "J" and (2) the Siemens "H" turbine design. However, the calculated emissions of these two designs are not equal in terms of GHG emissions. Tables 5-1 and 5-2 show that the MPS design would emit approximately 351,000 tons of CO_2e per year more than the Siemens model. That is an increase of 8.6 percent in GHG emissions.

The SOB states that the heat rates and energy efficiencies for these units "were evaluated and shown to be more efficient compared to other operating power generating facilities of similar size and class." (SOB at p.11) While it appears that the designs evaluated by FPL are some of the most energy efficient turbine/HRSG options available, Region 4 must still select the BACT limit based on the most efficient design, unless the applicant demonstrates a sufficient site-specific basis to reject a particular technology. Here, the applicant cannot make this claim because there is no evidence that either the MPS or the Siemens designs would be infeasible at the Port Everglades site. To the contrary, FPL indicates that it is able to choose between the two turbine technologies. The PSD permit must require the Port Everglades Project to meet a GHG emission rate that is achievable by the most efficient unit, which in this case is the Siemens H design that would emit 8.6 percent less GHG pollution than the MPS design.

Clean Air Act § 165(a)(4) requires the Region to select the Best Available Control Technology (BACT) as the basis for the emissions limit, which is defined as "an emissions limitation ... based on the maximum degree of reduction for each pollutant subject to regulation under the Act..." 42 USC 7479(3); 40 CFR 52.21(b)(12). Reducing GHG emissions is directly related to minimizing the quantity of fuel required to make electricity. In this case, the proposed annual CO_2e emissions of the Siemens design are 8.6 percent lower than the MPS design, a difference of 351,573 tons/yr CO_2e. This difference in emissions is important, particularly because the SOB concludes that energy efficiency options are the preferred option for BACT as opposed to an add-on technology.

The PSD provisions do not allow the permitting authority to select a higher emitting technology based on the applicant's potential preference for a different turbine/HRSG design. The BACT requirement is defined as "the maximum degree of reduction for each pollutant." 42 USC 7479(3). FPL does not suggest that the Siemens design is infeasible or inconsistent with the purpose of the project. Therefore, the top-down BACT analysis requires the Region to select the lowest emitting technology as the basis for setting the BACT emission limit.

Energy efficiency is a critical component of the BACT analysis, particularly for GHGs. EPA's *PSD and Title V Permitting Guidance for Greenhouse Gases* is clear on this point: "Use of inherently lower-emitting technologies, including energy efficiency measures, represents an opportunity for GHG reductions in these BACT reviews."[1] The energy efficiency of a technology is fundamental to the BACT determination. "Initially, in many instances energy efficient measures may serve as the foundation for a BACT analysis for GHGs, with add-on pollution control technology and other strategies added as they become more available."[2] In this case, in addition to considering add-on technologies such as carbon capture and sequestration

[1] *PSD and Title V Permitting Guidance for Greenhouse Gases*, March 2011, p.29.
[2] *Id.*

(CCS), the Region must first establish the BACT limit foundation by setting the limit based on the most energy efficient technology design. "When a permit applicant proposes to construct a facility using a less efficient boiler design...a BACT analysis for this source should include more efficient options."[3]

There is no dispute that different turbine/HRSG designs result in different annual GHG emissions. The Region does not, however, acknowledge the importance of the 8.6 percent difference in annual GHG emissions of the turbine/HRSG designs analyzed in the SOB, concluding instead that the two designs "were evaluated and shown to be more efficient compared to other operating power generating facilities of similar size and class." (SOB at p.11) Ignoring these recognizable and achievable energy efficiency gains evident between the two turbine/HRSG designs considered in the draft permit is contrary to the Region's *PSD and Title V Permitting Guidance for Greenhouse Gases*, which expressly addresses an example of energy efficiency at a coal plant:

> In general, a more energy efficient technology burns less fuel than a less energy efficient technology on a per unit of output basis. For example, coal-fired boilers operating at supercritical steam conditions consume approximately 5 percent less fuel per megawatt hour produced than boilers operating at subcritical steam conditions.[4]

The EPA guidance makes clear that energy efficiency must be considered in the BACT analysis. There is no basis for determining that "some of the most efficient" designs all constitute BACT. The NSR Manual provides: "The reviewing authority...specifies an emissions limitation for the source that reflects the **maximum degree** of reduction achievable..." (NSR Manual, p.B.2 (emphasis added)). Without a showing that the most efficient design is either technically infeasible or that it should be eliminated due to disproportionate site-specific energy, economic or environmental impacts, the Region must set the GHG BACT emission rate limit based on the most efficient turbine design.

It is irrelevant for purposes of the BACT analysis that the applicant may wish to make a final selection of the turbine design based on a choice among multiple options. BACT is required by law and is not an afterthought that can be subordinated to other considerations. (NSR Manual at p.B.31.) The Region must set the GHG emission limit based on the most energy efficient turbine design. Turbine vendors that can meet that limit are free to compete for FPL's business. This feature of the BACT program has been remarkably successful in encouraging development of more effective pollution controls for over 40 years.

2. The Region Should Clarify the Type of Fuel Used as Backup Fuel Oil

Sierra Club supports the region's determination to split the GHG BACT limit for operations on natural gas and for fuel oil; however, the Region must clarify they type of fuel to be used as

---

[3] *Id.*

[4] *PSD and Title V Permitting Guidance for Greenhouse Gases*, March 2011, p.21 (citing: U.S. Department of Energy, Cost and Performance Baseline for Fossil Energy Plants - Volume 1: Bituminous Coal and Natural Gas to Electricity, DOE/NETL-2007/1281, Final Report, Revision 1 (August 2007) at 6 (finding that the absolute efficiency difference between supercritical and subcritical boilers is 2.3% (39.1% compared to 36.8%), which is equivalent to a 5.9% reduction in fuel use), available at http://www.netl.doe.gov/energyanalyses/pubs/Bituminous%20Baseline_Final%20Report.pdf).

backup "fuel oil." FPL proposes to operate the facility's combined-cycle turbines on natural gas, with up to 1000 hours per year on fuel oil. We note that the draft permit is inconsistent with respect to the fuel allowed for the 1000 hours of operation, variously describing it as "fuel oil" (Condition IX.C.1) and Ultra Low Sulfur Diesel (Condition IX.C.2). It appears that the applicant intended ULSD to refer to "light oil," but the draft permit and SOB do not include a consistent definition and use for ULSD. BACT requires an evaluation of lower emitting fuel alternatives; therefore, the Region should conduct an analysis of fuel oil alternatives and include a permit condition that requires the cleanest burning fuel available. Our comments that follow refer to "fuel oil," regardless of the actual language in the Statement of Basis, which variously refers to this fuel as "fuel oil," "ULSD", and "ULSD fuel oil."

FPL had proposed a greenhouse gas (GHG) best available control technology (BACT) limit that averaged the CO_2 emissions of 7,760 hours of operation with natural gas and 1000 hours with fuel oil. Region 4 properly rejected this approach and instead set two separate GHG BACT limits for each fuel type. Splitting the BACT limit based on fuel type is appropriate. Operating the combustion turbines on fuel oil is far less efficient than operating with natural gas. Setting a blended limit would have allowed FPL to operate the plant at a less efficient rate than the combined-cycle turbines are capable of meeting.

Fuel oil operation at the Port Everglades Project should only be used as a backup in cases of emergency, and therefore a less protective GHG BACT limit should only apply during those emergencies. Even if the Port Everglades facility is permitted to operate up to 1000 hours on backup fuel, which as discussed in more detail below is far too high, that does not mean that the facility *will* operate on 1000 hours of fuel oil each year. Under normal operating conditions, the facility should run on natural gas. It is therefore appropriate to require the facility to meet the best achievable GHG limit that the combined-cycle natural gas turbines can achieve while those units are operating under non-emergency conditions on natural gas.

3. The BACT Requirement to Consider Cleaner Fuels Precludes the Use of Fuel Oil Absent Stringent Restrictions.

Draft permit Condition IX.C(2) would allow the Port Everglades project to operate using fuel oil for up to 1000 hours on a 12-month rolling total. There are no restrictions on what conditions must be present for FPL to operate the facility on fuel oil, and there is no definition in the draft permit for what constitutes an "emergency" that would require the use of backup fuel oil. This permit condition therefore substantially increases the potential GHG emissions at the facility.

The SOB states that FPL intends to operate on fuel oil under various conditions, including "the need for electricity at a reasonable cost, and whether [fuel oil] is the most cost-effective alternative available." (SOB p.12-13) In other words, FPL intends to operate the Port Everglades facility on fuel oil whenever it is cheaper to do so. This proposed operation of the facility does not comply with the Clean Air Act's requirement that facilities operate with the best available control technologies. The SOB clearly acknowledges that the use of natural gas as a fuel source is an inherently lower emitting practice than the use of fuel oil. (SOB p.12) The draft permit's GHG limit is 42 percent higher for fuel oil than for natural gas, and the fuel oil limit of 1,176 lb CO_2e/MWh does not even come close to meeting the proposed new source performance standard of 1000 lb/MWh for combined-cycle units. In short, fuel oil is an outdated and dirty technology that does not meet the requirements that the facility comply with BACT limits.

Despite the obviously higher pollution from fuel oil use, the Region does not provide any restrictions on the use of fuel oil, other than an arbitrary cap of 1000 hours on a 12-month rolling average. This means that the facility can operate on fuel oil up to 1000 hours annually regardless of whether there is any emergency, any limit to natural gas supply, or any risk of electric system reliability. FPL can simply switch to fuel oil whenever it decides that fuel oil is cheaper. The top-down BACT analysis does not allow this condition. The Region must set limits based on the technologies that are feasible. In this case, the use of natural gas fuel is clearly feasible because it is the primary purpose of the plant. The Region rejects "100% use" of natural gas "[b]ased on the need for reliability and the risk associated with Florida's limited pipeline system." (SOB p.13) However, the draft permit's conditions are not narrowly tailored to alleviate the concerns of reliability and natural gas supply disruption. Even if it were reasonable to allow the use of fuel oil in an emergency, such as a pipeline disruption caused by a hurricane, the draft permit's allowance of up to 1000 hours every year is completely arbitrary and would allow FPL to operate on fuel oil even absent any "reliability and risk" concerns.

The Region must revise the permit condition allowing the use of fuel oil to state that fuel oil may only be used during times of natural gas supply disruption due to emergency, and in no case may the use of fuel oil exceed 100 hours annually.[5] The Region should also include a definition of "emergency" conditions that warrant use of backup fuel oil, and that definition should specify that high natural gas prices are not by themselves an emergency. Fuel oil should only be used in cases of true emergency that disrupts the ability to deliver natural gas to the Port Everglades facility. BACT requires the best available technology, and in this case the facility must operate on natural gas fuel unless it is infeasible to do so.

4. Use of Duct Firing is Unclear

FPL's application states that the Project will not have duct firing. (Application, p.4-13 ("these CTs will not have duct firing"")) However, Table 5-1 in the SOB indicates that the MPS turbines design will have "CTs/HRSGs with Duct Burners." (SOB p.7) It is possible, though unclear, that the addition of duct burners in the MPS unit accounts for the 8.6 percent higher annual CO_2e emissions. As FPL noted in its application, duct firing is less efficient than combined-cycle operations and therefore produces CO_2e emissions at a higher rate. The Region should clarify that the GHG emission rate was not calculated based on duct firing and should amend Table 5-1 to eliminate the reference to duct firing if indeed duct firing was not included.

If, on the other hand, the GHG BACT limit was determined based on an assumption that duct burners would be used with the MPS turbine design, then the Region should reevaluate the BACT analysis to consider other, cleaner alternatives. The top-down BACT analysis should look at cleaner production processes for achieving the additional on-peak energy that the duct burners would provide. Alternatives to duct burners could include battery storage, solar hybrid configuration (or a combination battery and solar hybrid), a small combustion turbine, and using the auxiliary boiler for supplemental steam. Sierra Club notes that the heat rate from duct burning is approximately the same, or worse, than the efficiency of new internal combustion engine generators, which is to say that it is very inefficient as a source of peaking generation capability. Addressing the least efficient part of a proposed plant—the duct burning peak topping

[5] Annual 100 hour cap based on EPA limits for emergency generators. *National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines,* 78 Fed. Reg. 6674 (January 30, 2013).

generation—can significantly increase a plant's overall efficiency without redefining the project. There are numerous alternatives for short-term, peak power generation at the scale proposed for duct burning at the Project that would achieve significant reductions in not only GHGs, but in other pollutants. The Region has not addressed any of these alternatives in the draft permit and, in fact, has stated that duct burners will not be used even though they are shown in the emission tables.

5. The Region's BACT Analysis for the Compressor Station is Inadequate

The proposed compressor station at the Port Everglades facility would be the second largest contributor to GHGs with 55,313 tpy permitted by the draft permit. However, the SOB contains almost no analysis of the compressor station's emissions, and the only limitation on the operation of the compressors is that "only 2 of 3 compressors shall operate at a time." (SOB p.15) Even this operational limit is eliminated by draft permit Condition IX.E(5) in cases of an undefined "emergency."

The BACT analysis for the compressor station is completely lacking and does not meet the requirements of a top-down BACT analysis. The Region's BACT analysis did not consider the use of more efficient turbines to drive the compressors, and the analysis ignored major potential sources of emissions from the compressor station, including fugitive emissions of methane from compressor seals, valves and connectors, and blowdown emissions. The draft permit also omits any compliance reporting. The Region only requires record keeping for the compressor station, but there are no monitoring or compliance requirements applicable to the compressor station that would ensure that the annual limit of 55,313 tpy is not exceeded. The compressor station must be included in a rigorous BACT analysis with a clear, measurable, and enforceable compliance requirement.

6. The Draft Permit Does Not Set Any Method for Determining Compliance with Auxiliary Equipment Emissions Limits

The draft permit includes annual GHG emission limits for the auxiliary equipment (auxiliary boiler, emergency generators, gas compressors, fire pump engine, circuit breakers, temporary construction boilers). (Draft Permit, Condition IX.E(1)) However, the draft permit does not establish any methods to determine compliance with the annual emission limits for auxiliary equipment. The draft permit only requires FPL to monitor fuel flows for the auxiliary boilers, emergency generators, and fire pump engines, but the monitoring of fuel flows does not by itself ensure that FPL is operating the equipment efficiently or in compliance with the appropriate annual limit. There is no requirement or methodology included in the draft permit's conditions that require calculation of annual GHG emissions based on emission factors determined from periodic stack tests and fuel usage or time of operation. The Region should revise the permit to ensure that there are clear, enforceable compliance methods to determine that the Port Everglades Project will meet the annual GHG emission limits for auxiliary equipment.

7. The Region Improperly Ignored Other BACT Limits

FPL stated in the application that the Project would have a heat rate 10 percent lower than average existing combined-cycle plants based on 2009 EIA data. (Application, p.4-15) The SOB similarly stated that the units "were evaluated and shown to be more efficient compared to other operating power generating facilities of similar size and class." (SOB at p.11) This comparison to

the average of existing units is not determinative for a BACT limit. The Region must consider the best achievable emissions limits, not an average of existing units. The Region must consider an evaluation of recently permitted and constructed units. For example, the Palmdale Hybrid Power Project has a permitted GHG BACT limit of 774 lb CO_2/MWh. If Palmdale is able to achieve 774 lb CO_2/MWh, then the Region must consider those control technologies and the associated emission rates as part of the BACT analysis for the Port Everglades Project.

8. Startup Periods are Too Long

The draft permit Condition IX.D allows up to four hours for cold startup and 2 hours for warm and hot startup in any 24 hours period. This period of startup and shutdown is important because the GHG BACT limits in Condition IX.C do not apply to startup and shutdown. This exemption means that the facility's combustion turbines can emit more than 832 lb CO_2e/MWh for several hours each day. This exception is excessive and unnecessary. Further, there is no limit on the number of these startup and shutdowns.

New turbine design technology allows for combined-cycle turbines to startup very quickly – within 30 minutes for warm startups and 90 minutes for cold startups. For example, the proposed Oakley Generating Station in California is designed to be able to start up and dispatch quickly with GE's Rapid Response package.[6] The Rapid Response package allows the plant to start up from warm or hot conditions in less than 30 minutes. The Rapid Response package achieves this fast performance by initially bypassing the steam turbine when the gas turbines are started up. In a conventional combined-cycle system, the gas turbine needs to be held at low load for a period of time while the HRSG is warmed up and steam is gradually fed into the steam turbine and the steam turbine is brought up to operating temperature. The steam turbine needs to be brought up to operating temperature slowly in order to minimize thermal stresses on the equipment and to maintain the necessary clearances between the rotating and stationary components of the turbine. This delay necessitated by having to slowly warm up the HRSG and steam turbine means that the gas turbine cannot increase load as rapidly as a simple-cycle gas turbine to quickly provide power to the grid. It also causes increased emissions, including CO_2, because the combustion turbine needs to be held at low load – where it is not as efficient – while the HRSG and steam turbine are warmed up. The GE Rapid Response system initially bypasses the steam turbine when the combustion turbines are started, allowing them to ramp up quickly and begin providing power to the grid. The steam turbine can then be warmed up slowly without requiring the combustion turbines to be held at low load (except for a short time for cold startups), through the controlled admission of steam from the HRSGs into the steam turbine. The Rapid Response package therefore allows the facility to start up and begin providing power more quickly than a conventional system, which will enhance operational flexibility and reduce emissions associated with startups.

The Region must consider whether a fast-start turbine design available from GE or similar fast-start designs from other turbine manufacturers could be used at the Port Everglades facility to reduce startup times and thereby reduce overall GHG emissions.

In addition to setting excessively long startup and shutdown periods, the Region also fails to require the facility to meet any GHG emission limit during startup, shutdown and maintenance

[6] Bay Area Air Quality District Final Determination of Compliance for Oakley Generating Station, p.12. (available at: http://www.energy.ca.gov/sitingcases/oakley/documents/others/2011-01-21_BAAQMD_FDOC_TN-59531.pdf)

(SSM). The Region cannot summarily exempt Port Everglades from GHG BACT limits during SSM. "[The permitting agency] must make an on-the-record determination as to whether compliance with existing permit limitations is infeasible during startup and shutdown, and, if so, what design, control, methodological or other changes are appropriate for inclusion in the permit to minimize the excess emissions during these periods." *Rockgen Energy Center*, 8 E.A.D. 536, 544 (EAB 1999). There is no discussion in the SOB about any impediments to meeting the GHG BACT limit during SSM. The blanket exemption from meeting any GHG BACT limit during SSM therefore fails to comply with BACT requirements. EPA must revise the draft permit to ensure that emissions are minimized to the maximum extent achievable during periods of SSM.

9. BACT Analysis for SF_6 Emissions from Compressor Station

Sulfur hexafluoride (SF_6) is an extremely potent greenhouse gas. The SOB includes a BACT analysis for SF_6 for circuit breakers, which are designed to be closed systems but may leak SF_6. The Region determined that the BACT limit for SF_6 for the circuit breakers is 4.5 tpy CO_2e based on the use of leak detection and periodic inspection and maintenance practices. However, the draft permit and SOB do not address the potential for SF_6 emissions from the compressor station. SF_6 is commonly used for leak detection in natural gas pipelines as a tracer gas. The application does not address whether SF_6 will be used for leak detection in the natural gas pipeline and therefore does not consider whether the compressor station will result in SF_6 emissions. The Region should clarify with FPL whether SF_6 will be used for leak detection at the compressor station, and if so, the Region must include an SF_6 BACT analysis for the compressor station in addition to the circuit breakers. If FPL asserts it is not used, the permit should be revised to include a condition forbidding its use.

Sierra Club appreciates the opportunity to provide these comments.

Sincerely,

/s/ Travis Ritchie
Travis Ritchie
Associate Attorney
Sierra Club
85 Second Street, Second floor
San Francisco, CA 94105
(415) 977-5727
travis.ritchie@sierraclub.org

From: danlarson
Sent: Sunday, June 16, 2013 9:03 PM
To: Parks, Andrew
Cc: Meiburg, Stan; Mallory, Brenda; Perciasepe Bob
Subject: Hearing Request PSD-EPA-4010 Science 101 and how EPA/FDEP isn't using it

Subject: Hearing Request PSD-EPA-4010
Re: Science 101 and how EPA/FDEP isn't using it

Good Morning Andrew Parks,

Thank you for the time you recently spent on the phone discussing the Port Everglades greenhouse gas permit notice. It was not at all clear to me who would actually consider my request, therefore I am making the request in writing to you and asking you to add my comments to the docket and forward this request through your management to your regional administrator.

In accordance with the Published Notice of May 31, 2013 in the Sun Sentinel, **I request that EPA actually hold the public hearing** tentatively scheduled on July 2, 2013, from 4:00 pm to 7:00 pm, at the advertised following location: Broward County Library, 100 South Andrews Avenue, Fort Lauderdale, FL 33301, (954) 357-4444.

In the addition to the meeting, **I request the described 30-day extension of the 30-day comment period** to provide additional time to prepare comments and postponement on the issuance of the permit of the Port Everglades PSD-EPA-4010 Permit.. The public hearing will allow EPA to explain and for the public to understand the following matters;

Where is an explanation in the notice regarding a petition or appeal process such as is normally found in state permit public notices.The public notice as published is clearly incorrect.

What is the action about? Why are greenhouse gases regulated. It looks as if the state DEP already granted a permit for several million tons of pollutants for the same project and now EPA proposes to allow over 4 million more tons of pollutants from the same project.

The Port Everglades FPL Plant WILL RAISE EMISSIONS NOT DECREASE EMISSIONS. I am truly concerned with the Draft Permit as presented is missing substance, depth, information, and quite frankly it should be called "Permit Light".

Why did we not hear of this additional permitting action by EPA until the published notice? In other words, why was there no effort to inform and conduct outreach to the population of South Florida on this entirely different kind of permit. This did not afford an opportunity for the public and myself to

become informed of the issues so we can understand and comment on this very complicated permit.

Where is the public outreach, education and information that EPA would have everyone believe it conducts? Where is the public input? I am amazed that there is absolutely no public engagement or education other than a notice in the Sun Sentinel next to garage sale ads.

What is the meaning of 4 million tons greenhouse gases from a coastal facility presumably subject to the effects of rising ocean levels? For how many years can it operate with ever increasing greenhouse gas emissions?

Why does EPA plan to issue a permit when the National Oceanic and Atmospheric Administration (NOAA) Fisheries Service is currently reviewing the proposed project consistent with Section 7 of the Endangered Species Act? What are the endangered species? We should be provided an explanation of the issues and the reasons why NOAA has not reached a conclusion on the project.

Where are the studies exclusive to the unique ecosystem of the State of Florida? Where are the studies involving weather patterns unique to Florida?

The FDEP PSD Permit under the guise of the Power Plant Siting Act is already seriously flawed. Where are the cumulative impacts? FPL is building Port Everglades 1250 Megawatts , Riviera Beach 1250 Megawatts, Cape Canaveral 1250 Megawatts, all 3 times bigger than the original plants. FPL recently built a 3800 Megawatt plant called the West County Energy Center which is the largest power plant in the U.S. It is located within a few hundred feet from the last natural Everglades preserve called the Arthur Marshall Loxahatchee National Wildlife Refuge 147,000 acres,& just south of the J.W.Corbett Wiidlife Area 60,388 acres,and also about 1 mile from my house. It emits more than 12 million tons of GHG per year and emits massive clouds held stationary by humidity into an area that is already saturated much of the time. Basically my neighborhood is shrouded in gray clouds daily with the previous blue sky not visible.

It doesn't look like EPA require FPL to do anything more at Port Everglades than for the other projects while calling the Port Everglades permit a BACT.

Instead of voodoo science just go to a 4th grade science level and include 90% humidity 9 months of the year. The modeling utilized by every acronym, e.g. DEP, SFWMD, EPA etc., is flawed,drowning in BS and incorrect. I don't think all relevant factors have been taken into consideration. How does this permit take into consideration Gas Driven Global Warming? FPL is NOT using the most efficient, cleanest BACT technology available. Their pollution track record in the State of Florida is appalling.

I do not think the EPA is taking the issuing of this permit seriously. The FDEP PSD Permit under the guise of the Power Plant Siting Act is already seriously flawed. Where are the cumulative impacts ? Why are they not being looked at in total? Many including myself find huge cracks in the system (DEP doesn't

even look at weather or humidity) so we would expect more from our Federal Oversight which is the EPA.

Your Office is supposed to Enforce the 1972 Clean Air Act and the Clean Water Act. Florida is being destroyed by the DEP/EPA yardstick which puts Florida into measurements and ranges which do not belong in the State of Florida let alone the Everglades, an ecosystem which does not exist anywhere else in the world.

Please proceed with the described public hearing to engage, inform, and take seriously the public health, safety, and welfare of all Floridians. The four FPL plants including the one at Port Everglades will be a significant impact on the our air quality and global warming. Please see the link below which is a Science coarse and read page 27. Please confirm the time and place where this hearing will be held. Regards Alexandria Larson 561-791-0875 P.S. Please correct me but this was a meeting advertised for July 2,2013 not a hearing?

Page 27 Temperature is basic science and were not looking at what happens in Florida. Subject: Science 101 and how EPA/DEP isn't using it

http://chemtrailsplanet.files.wordpress.com/2013/03/chemtrails-chemistry-manual-usaf-academy-1999.pdf

July 1, 2013

Mr. Andrew Parks, P.E.
Environmental Engineer
U.S. Environmental Protection Agency
Region IV
61 Forsyth Street, SW
Atlanta, GA 30303

Re: Florida Power & Light Company
Port Everglades Next Generation Clean Energy Center
Draft Green House Gas Permit Comments

Dear Mr. Parks,

Florida Power & Light Company (FPL) appreciates the chance to provide the attached comments to the United States Environmental Protection Agency (EPA) regarding the draft Green House Gas (GHG) permit issued for the Port Everglades Next Generation Clean Energy Center (PEEC) on May 31, 2013. PEEC will be one of the most efficient power plants in the country when it begins commercial operation in June 2016, and is estimated to result in a FPL fleet-wide reduction in GHG air emissions of approximately 22 million tons over the life of the project. FPL requests an opportunity to discuss our comments with EPA at your earliest convenience.

If you have any questions regarding this submittal, please do not hesitate to contact me at 561-691-2808 or Andy Flajole at 561-691-2766.

Sincerely yours,
Florida Power & Light Company

Matthew J. Raffenberg
Director, FPL Licensing and Permitting

CC (via email only):
Audra Livergood, National Marine Fisheries Service
Stacy Foster, FPL
Michael Tammaro, FPL

FPL COMMENTS ON DRAFT GREENHOUSE HOUSE GAS (GHG) PREVENTION OF SIGNIFICANT DETERIORATION (PSD) PERMIT PSD-EPA-R4010 FOR PORT EVERGLADES NEXT GENERATION CLEAN ENERGY CENTER (PEEC)

FPL offers the following comments for consideration by EPA in the final PSD Permit for the FPL Port Everglades Next Generation Clean Energy Center (PEEC). PEEC will be one of the most efficient natural gas fired combined cycle in the U.S. and will be recognized as setting a standard for highly efficient electric generation coupled with low GHG emissions. The comments are primarily being provided to clarify conditions for compliance purposes and avoid duplication in requirements due to over-lapping regulatory programs including the air construction permit issued by the Florida Department of Environmental Protection (FDEP). To facilitate review, the conditions in the draft permit are presented with edits as ~~strikethroughs~~ for suggested deletions and <u>underline</u> for suggested additions. An explanation for the suggested changes directly follows the draft condition.

C. Combustion Turbine (CT) Emission Limits

1. Except as noted below under Conditions IX.D <u>and J</u>, on and after the date of initial startup, Permittee shall not discharge or cause the discharge of emissions from the CT Unit into the atmosphere in excess of the following:

- ***The shakedown condition should be cited in this condition.***

	Emission Limit (per CT) (natural gas firing)	**Emission Limit (per CT) (fuel oil burning)**
GHG Limit (as CO_2e)	~~832 lb CO2e/MWh net output (12 month rolling average)~~ 877 lb CO_2e/MWh net output (12-month rolling average)	~~1,176 lb CO2e/MWh net output (12 month rolling average)~~

- ***FPL request that EPA consider the proposed as the BACT limit for PEEC that as described in the application includes all operating conditions such as startups, shutdowns, fuel switches, 2 and 1 CT operation with the steam turbine operating at lower less efficient loads, low load operation on 1, 2 or 3 CTs, dual fuel operation (oil on one CT and gas on two CTs), malfunctions of the CTs or steam turbine, CT performance deterioration from new and clean, and unit environmental testing. The BACT analysis included information on BACT limits for two gas-only fired combined cycle projects that were 918 and 950 lb CO2e/MW(net) for permits issue by EPA Regions 6 and 9, respectively. Indeed, since the PEEC GHG PSD Application has been submitted several other GHG***

PSD permits have been issued for similar combined cycle projects that have BACT limits much higher than those proposed for PEEC. This included Calpine's Deer Park Energy Center (PSD-TX-979-GHG) and Calpine Channel Energy Center (LLC)(PSD-TX-955-GHG) with limits of 920 lb CO_2e/MW(net) for each project. Clearly, even including oil firing as part of the 12-month rolling average, establishes an appropriate BACT emission limit for this Project. Moreover, the proposed emission limit for USLD oil cannot be met as this fuel will likely be used in a much different fashion in any 12-month rolling period than the primary fuel, natural gas. The emissions provided in the application and additional information was based on full load at 75 degree F turbine inlet. If oil is used in the summer months the turbine inlet temperature will likely be much higher thereby reducing the heat rate. The amount of time for startup and shutdown using oil will be relatively high compared to the amount of operation especially when only testing is performed as testing is conducted for short durations. The 1,176 lb C_2e/MWh as an individual limit cannot be achieved for USLD oil for the reasons cited above.

2. ~~Each~~ The three CTs associated with PEEC CT shall not operate firing Ultra Low Sulfur Diesel (ULSD) more than an aggregate of 3,000 ~~1,000~~ hours/year on a 12-month rolling total. The Permittee shall monitor and record the number of hours each CT operates on ULSD to be recorded monthly and totaled every month for the previous 12 months.

   - ***This condition is requested to be the same as that in the FDEP authorization, that is: "Operation: The hours of operation of Unit 5 are not limited (8,760 hours per year). ULSD fuel oil may be fired up to the fuel equivalent of 3,000 hours aggregated over the three CTGs during any calendar year. [Application No. 0110036-010-AC; Rule 62-210.200(PTE), F.A.C.] This allows flexibility in operation and would not increase GHG emissions. In contrast, if oil is used and only one CT is required it will likely be the CT that operates best when oil-fired.***

D. Requirements during Combustion Turbine Startup and Shutdown

1. Startup is defined as the commencement of operation of any emissions unit which has shut down or ceased operation for a period of time sufficient to cause temperature, pressure, chemical, or pollution control device imbalances, which result in excess emissions above the limits in Condition IX.C.

   a. ~~A cold startup means a startup when the CT has not been in operation during the preceding 48 hours~~. A cold "startup of the steam turbine system" is defined as startup of the 3-on-1 combined cycle system following a shutdown of the steam turbine lasting at least 48 hours.

   b. Warm and hot start-ups include all startups that are not a cold startup of the 3-on-1 combined cycle system.

- **It is suggested that the definitions be the same as the FDEP permit.**

2. Shutdown is defined as the period beginning with the lowering of equipment from normal operating load and lasting until fuel flow is completely off and combustion has ceased.

3 The duration of startup and shutdown periods shall be recorded and reported semi-annually as part of Condition IX. I.4.~~not exceed the following in any 24 hour period, for the CT unit, as verified by the CEMS~~:

~~Duration~~	
~~Cold Start~~	~~4 hours~~
~~Warm and Hot Start~~	~~2 hours~~
~~Shutdown~~	~~2 hours~~

- ***This condition limits the actual duration of cold start, warm start and shutdowns. For a 12-month rolling average the limited start-ups and shut downs are included in the proposed limit as discussed above and restricting the length for these intermittent conditions is unnecessary. In addition, there may be circumstances during a 24-hour periods that multiple starts or shutdowns are necessary. However, the 12-month rolling average as proposed for PEEC would not be exceeded if multiple startups and shutdowns occurred in any 24-hour period. Please note that the FDEP condition only provides for an exclusion of emissions during these operating conditions and not an express time limit for these operating conditions.***

E. Auxiliary Equipment Emission Limits and Work Practices

1. At all times during operation (excluding during maintenance activities and failures), including equipment startup and shutdown, Permittee shall not discharge or cause the discharge of emissions from each unit into the atmosphere in excess of the following, and shall otherwise comply with the following specifications on a 12-month rolling total:

- ***FPL requests that maintenance and failures be excluded for these minor sources of GHG emissions. This is especially important for circuit breakers using SF_6 where it is difficult if not impossible to determine losses form maintenance activities and failures could occur.***

4. ~~Except during an emergency, the~~ The Emergency Generators shall be limited to operation ~~of the engine for maintenance and testing purposes~~ as an "emergency stationary RICE" as defined in 40 Part 63 Subpart ZZZZ. Annual hours of operation for Emergency Generators, ~~for maintenance and testing,~~ shall not exceed 100 ~~24~~ hours per 12-month rolling total for each generator.

- ***This condition is more restrictive than the FDEP permit and establishes a limit for maintenance per 12-month rolling average. This unit is regulated under Subpart IIII and is classified as an "Emergency Stationary RICE" under***

Subpart ZZZZ. These regulations have operating limits that would be applicable. Also, the term "emergency" is not defined in EPA PSD regulations and could be misinterpreted. The 100 hours per 12-month rolling average should be the BACT limit as determined in the emission limits in the permit. Also, this is consistent with the FDEP permit.

6. ~~Except during an emergency, the~~ The Fire Pump Engine shall be limited to operation as an "emergency stationary RICE" as defined in 40 CFR Part 63 Subpart ZZZZ ~~of the engine for maintenance and testing purposes~~. Annual hours of operation for the Fire Pump Engine~~, for maintenance and testing,~~ shall not exceed 24 hours per 12-month rolling total.

   - ***Same comments as the emergency generator***

7. Circuit Breakers ~~shall be used as electrical interrupters in the event of a power surge~~, shall be equipped with low-~~density~~ pressure alarms~~, and shall be visually inspected on a daily basis~~. In addition, Permittee shall implement a maintenance program that maintains the integrity of the breakers and minimizes SF_6 emissions. ~~breakers shall be inspected by the manufacturer once every 5 years, and shall be overhauled at the end of their 20 year life cycle.~~ Records of inspection shall be kept in accordance with Condition IX.I. Given that this is a work practice standard, no quantification of SF6 emissions is required for compliance with the BACT emissions limit of 2.25 tons per year of CO_2e per breaker. Maintenance activities and failures are not considered in the BACT emission limit.
8. .

   - ***The daily inspection appears unnecessary since these breakers will have a performance standard and checked on a regular basis to meet requirements of 40 CFR Part 98 Subpart DD. The primary way to measure SF_6 is by weighting the equipment and using a mass balance to determine emissions. The performance standard cited in the information provided to EPA was the International Electrotechnical Commission (IEC) standard of 0.5 percent (IEC Standard 62271-1, 2004) that is recognized by the EPA SF6 Reduction Partnership as an effective criterion for minimizing fugitive SF6 emissions. The manufacturer inspection every 5 years and overhaul should be replaced with "periodic inspections according to manufacturer recommendations". Please note that this equipment is sealed. As discussed previously, it is difficult to measure losses from maintenance activities and failures could occur. Therefore, not including these as part of the BACT limits is suggested.***

8. The Temporary Construction Boilers shall be limited to use only during the Project construction period to provide steam during construction activities that includes but not limited to~~for~~ HRSG cleaning and associated steam blows. Annual hours of operation for each boiler shall not exceed an aggregate of 3,000 ~~1,500~~ hours per 12-month rolling total. The Temporary Construction Boilers will be permanently shut down and removed from the facility once commercial operation of the Project begins.

- ***The underlined text appears only to apply to the HRSG and is too restrictive as other activities may need steam. Steam is needed to clean steam turbine connections and anywhere steam piping is used. Since steam is used throughout the 3-on1 combined cycle unit the location of the boiler is important. A boiler may be close to where more hours of steam is needed while the other boiler is located in a different area. Having an individual hour limit would require potentially moving a boiler to complete construction. Also, the FDEP permit allows an aggregate of 3,000 hours for the two boilers.***

~~**F. Continuous Emissions Monitoring System (CEMS) for CTs**~~

~~1. At the earliest feasible opportunity after first firing of CTs and before CTs commence commercial operation (as defined in 40 CFR § 72.2), in accordance with the recommendations of the equipment manufacturer and the construction contractor:~~

~~a. Permittee shall install, calibrate, and operate a CEMS for each CT that measures stack gas CO2 concentrations in parts per million by volume (ppmv). The concentrations shall be corrected to 15% O2 on a dry basis. No later than the end of the shakedown period as defined in Condition IX.J. or upon commencing commercial operations, whichever comes first, Permittee shall also maintain, certify, and quality-assure a CEMS for each CT that measures stack gas CO2 concentrations in ppmv, and shall conduct initial certification of the CEMS in accordance with Condition IX.F.6. The concentrations shall be corrected to 15% O2 on a dry basis.~~

~~2. The CO2 CEMS shall meet the applicable requirements of 40 CFR Part 75.~~

~~3. Each CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute clock-hour period.~~

~~4. The initial certification of the CEMS may either be conducted separately, as specified in 40 CFR § 60.334(b)(1), or as part of the initial performance test of each emission unit. The CEMS must undergo and pass initial performance specification testing on or before the date of the initial performance test.~~

~~5. The CEMS shall meet the requirements of 40 CFR § 60.13. Data sampling, analyzing, and recording shall also be adequate to demonstrate compliance with emission limits during startup and shutdown.~~

~~6. Not less than 90 days prior to the date of initial startup of the facility, the Permittee shall submit to the EPA a quality assurance project plan for the certification and~~

~~operation of the CEMS. Such a plan shall conform to EPA requirements contained in 40 CFR Part 60 Appendix F for CO2, and 40 CFR Part 75 Appendix B for stack flow. The plan shall be updated and resubmitted upon request by EPA. The plan shall specify how emissions during startups and shutdowns will be determined and calculated, including quantifying flow accurately if calculations are used.~~

~~7. The gas turbine CEMS shall be audited quarterly and tested annually in accordance with 40 CFR Part 60 Appendix F, Procedure 1. Permittee shall perform a full stack traverse during initial run of annual RATA testing of the CEMS, with testing points selected according to 40 CFR Part 60 Appendix A, Method 1.~~

~~8. Permittee shall submit a CEMS performance test protocol to the EPA no later than 30 days prior to the test date to allow review of the test plan and to arrange for an observer to be present at the test. The performance test shall be conducted in accordance with the submitted protocol and any changes required by EPA.~~

~~9. Permittee shall furnish the EPA a written report of the results of performance tests within 60 days of completion via the contact information provided in Condition X.~~

~~10. The stack gas volumetric flow rates shall be calculated in accordance with the fuel flowmeter requirements of 40 CFR Part 75 Appendix D in combination with the appropriate parts of EPA Method 19.~~

~~12. Permittee shall measure and record, for each CT, the actual heat input (Btu) on an hourly basis.~~

~~13. Permittee shall measure and record, for each CT, the following:~~

~~a. Net energy output (MWhnet and kWhnet) on an hourly basis;~~

~~b. Pounds of CO2 per net energy output (lb CO2/MWhnet) on an hourly basis;~~

~~c. Net heat rate (Btu/kWhnet) on an hourly basis, based on total heat input for the facility;~~

~~d. The type of fuel (natural gas or ULSD) burned on an hourly basis;~~

~~e. The 12 month rolling average emission rate of lb CO2/MWhnet and Btu/kWhnet. The 12 month rolling average shall be based on the average hourly recordings summed for each operating month and averaged with the respective rates from the previous 11 months for each fuel type.~~

- ***These conditions appear to be written for NOx or CO. For CO_2 CEM, EPA methods have already been established that can accurately measure CO_2 emissions. CO_2***

monitoring have been implemented since the Acid Rain Program and FPL offers the following conditions developed by an experienced EPA CEMs engineer.

F. Continuous Monitoring of CO_2 for CTs

1. Permittee shall install and certify monitoring systems required for quantifying CO_2 emissions from each CT in accordance with the applicable requirements of 40 CFR Part 75. Consistent with §75.4(b), all applicable certification tests shall be completed within 180 calendar days after the date the unit commences commercial operation (as defined in 40 CFR 72.2).

2. Following initial certification, the CO_2 continuous measurement system shall be quality assured in accordance with the applicable requirements of 40 CFR Part 75.

3. The CO_2 continuous measurement system shall be capable of producing hourly determinations of CO_2 mass emissions in tons per hour (tons/hr).

4. In accordance with §75.62, an initial monitoring plan shall be submitted identifying the methodology for which CO_2 mass emissions will be continuously monitored. The initial monitoring plan shall be submitted no later than 21 days prior to the initial certification tests.

5. Permittee shall provide notifications as specified in §75.61 for any event related to the continuous measurement of CO_2.

6. Permittee shall measure and record, for each CT, the actual heat input (Btu) on an hourly basis in accordance with 40 CFR Part 75

7 Permittee shall measure and record, for each CT, the following on an hourly basis:

a. Energy output rate (MW);

b. CO_2 mass emission rate (tons CO_2/hr);

c. Heat Input rate (mmBtu/hr);

d. Unit Operating Time as described in §75.57(b)(2)

e. The type of fuel (natural gas or ULSD) burned;

8. Permittee shall calculate and record, for each CT, the following on a monthly basis:

a. Monthly average CO_2 emission rate (lbs CO_2/MWh) calculated as the sum of each hourly CO_2 Mass emission rate times the unit operating time for the hour divided by the sum of the recorded energy output rates times the unit operating time for the hour for all

hours of operation in each month. If more than one fuel is utilized in a month, a separate average CO_2 emissions rate shall be calculated for each fuel.

b. Monthly average heat rate (Btu/kWh) calculated as the sum of each hourly heat input rate times the unit operating time for the hour divided by the sum of the recorded energy output rates times the unit operating time for the hour for all hours of operation in each month times 1,000. If more than one fuel is utilized in a month, a separate average heat input rate shall be calculated for each fuel.

9. Permittee shall calculate and record, for each CT, the following on an annual basis:

a. The 12-month rolling average CO_2 emission rate (lbs CO_2/MWh) (for each fuel combusted in the previous 12 months) shall be calculated as the sum of each monthly average value times the monthly energy output (MWh) divided by the sum of the energy output (MWh) generated during the 12 month period.

b. The 12-month rolling average heat rate (Btu/kWh) (for each fuel combusted in the previous 12 months) shall be calculated as the sum of each monthly average heat rate value timese the monthly energy output (kWh) divided by the sum of the energy output (kWh) generated during the 12 month period.

- ***The last condition related to calculating the 12-month rolling average needs to factor in the amount of generation produced each month to determine compliance. The condition as originally written uses the averages of month rates. This can lead to an erroneous calculation where generation was very low for one of more months, coupled with a high lbCO_2e/MWhr. This averaging method will artificially increase the 12-month rolling lbCO_2e/MWh emission rate. A calculation is shown below using 100% load for 10 months of operation and two low load conditions with higher GHG emission rates for 2 months of operation. The example calculations are based on: 1. a weighted average based on the amount of monthly generation (the most accurate determination of a 12-month rolling average emission rate), and 2. an average of monthly average emission rates. As shown, the 12-month rolling by averaging the monthly lb CO_2e/MWh is 770 lb CO2e/MWhr while using a weighted average based on the amount of generation the 12-month rolling average is 763 lb CO_2e/MWh. This is about a 1% difference artificially created by the averaging method.***

Example Calculation of Aggregate versus Monthly Average:

Month	Days	lb CO_2e	MWh	lbCO_2e/MWhr
1	31	669,600,000	877,920	763
2	28	604,800,000	792,960	763
3	31	669,600,000	877,920	763
4	30	648,000,000	849,600	763
5	31	669,600,000	877,920	763
6	30	648,000,000	849,600	763
7	31	669,600,000	877,920	763
8	3	20,520,000	25,416	807
9	30	648,000,000	849,600	763
10	3	20,520,000	25,416	807
11	30	648,000,000	849,600	763
12	31	669,600,000	877,920	763
	Sum:	6,585,840,000	8,631,792	

Average Monthly Rates Adjusted for Generation Amount	Average of Monthly Rates
763 lb CO_2e/MWh	770 lb CO_2e/MWh

G. Performance Tests

~~1. Stack Tests~~

~~a. Within 60 days after achieving normal operation, but not later than 180 days after the initial startup of equipment, and, unless otherwise specified, annually thereafter (within 30 days of the initial performance test anniversary), Permittee shall conduct performance tests (as described in 40 CFR § 60.8) as follows:~~
~~a.. CO2 emissions from each CT~~

~~b. Permittee shall submit a performance test protocol to EPA no later than 30 days prior to the test to allow review of the test plan and to arrange for an Agency observer to be present at the test. The performance test shall be conducted in accordance with the submitted protocol, and any changes required by EPA.~~

~~c. Performance tests shall be conducted in accordance with the test methods set forth in 40 CFR § 60.8 and 40 CFR Part 60 Appendix A, as modified below. In lieu of the specified test methods, equivalent methods may be used with prior written approval from EPA:~~

~~i. EPA Methods 1-4 and 3B for CO2 emissions, and~~

~~ii. the provisions of 40 CFR § 60.8(f).~~

~~d. Upon written request and adequate justification from the Permittee, EPA may waive a specific annual test and/or allow for testing to be done at less than maximum operating capacity.~~

~~e. For performance test purposes, sampling ports, platforms, and access shall be provided on the emission unit exhaust system in accordance with the requirements of 40 CFR § 60.8(e).~~

~~f. Permittee shall furnish the EPA a written report of the results of performance tests within 60 days of completion to the address listed in Condition X.~~

- ***Performance Tests are unnecessary since CO2 emissions are continuously monitored using Federal methodologies (40 CFR 75) and for which the data are electronically validated and submitted using EPA required software.***

H. Monitoring for Auxiliary Equipment

1. Permittee shall install and maintain fuel measurement equipment, including but not limited to fuel tank gages and fuel receipts, an operational ~~non-resettable~~ totalizing mass or volumetric flow meter to measure fuel use ~~in each fuel line~~ for the 99.8 MMBtu/hr boiler (Auxiliary Boiler), the 2,250 kW emergency use engines (Emergency Generators), and the 300 hp emergency-use firewater pump (Fire Pump Engines)~~, to~~ Fuel use shall be recorded monthly and totaled every month for the previous 12 months.

   - ***Much of this equipment has not been purchased and there are numerous methods to measure fuel use including maintaining fuel records for tanks. For example, the diesel engines typically have a dedicated tank where measurements can be obtained. Given the minor emissions and limited operation of these units having a fuel flow meter with recording is unnecessary to demonstrate compliance with the BACT limit.***

~~3. Permittee shall install and maintain a leak detection system on the circuit breakers that signals an alarm in the facility's control room in the event that any circuit breaker loses more than 10% of its dielectric fluid. The owner/operator shall promptly respond to any alarm, investigate the circuit breaker involved, and fix any leak-tightness problems that caused the alarm.~~

- ***This condition is unnecessary with the requirements of Condition E.7. The breakers are sealed equipment and with regular inspections provide assurance that SF6 emissions are limited.***

I. Recordkeeping and Reporting

6. A period of monitor down-time shall be any unit operating clock hour in which sufficient data are not obtained by the CEMS to validate the hour for CO2 according to 40 CFR Part 75.

- **Suggest defining monitor-down time according to an existing regulatory requirement.**

J. Shakedown Periods

The combustion turbine and auxiliary equipment emission limits and requirements in Conditions IX.C, IX.D, and IX.E shall not apply during ~~combustion~~ shakedown periods for the commissioning of the 3-on-1 combined cycle unit. Shakedown is defined as the period beginning with initial startup and ending no later than initial performance testing, during which the Permittee conducts operational and contractual testing and tuning to ensure the safe, efficient and reliable operation of the plant. The shakedown period shall not exceed ~~90~~ 180 days for each fuel. With the exception of Conditions IX.C. D and E during shakedown periods.~~T~~ The requirements of Section III of this permit shall apply at all times.

- ***The 3-on-1 combined cycle unit requires integration of each CT/HRSG train with the steam turbine. This typically involves operation of the CT and combustion tuning prior to tying into the steam turbine. In addition, each fuel will need separate commissioning periods as their combustion processes are quite different. The last sentence appears to contradict the first sentence. This phrase was added for clarification.***

K. Global Warming Potential (GWP)

For the purposes of showing compliance with any GHG emission limit in this permit, the GWP factors listed in 40 CFR Part 98 Subpart A, Table A-1 as of the date of this permit shall be used. The GHG emission limits for CTs/HRSGs were developed using 40 CFR Part 98 Subpart C emissions factors (Tables C-1 and C-2). The GHG emission limits for the CTs/HRSGs may be adjusted after agency review if the actual emissions in lbCO2/MMBtu determined from the CEMs and fuel sampling are higher than those used as a basis of this permit. The current GWP and emission factors are listed below:

GHG Pollutant	**GWP Factor**	**Emission Factor ($kgCO_2$/MM Btu)**
CO_2	1	53.02
CH_4	21	0.001
N_2O	310	0.0001
SF_6	23,900	

- ***The use of the 40 CFR Part 98 emission factors could be different than the emissions that actually occur using pipeline natural gas in the CTs/HRSGs. FPL relies on several sources of natural gas and differences may occur. FPL requests that this condition include the possibility of an adjustment to the lbCO_2/MWh emission limit after agency review that would be based on actual data during operation.***